of the leads, and claims 24 and 29 specify that this lead upon which the pressure transducer is mounted is a ground lead. It is believed that the amendments to claims 24 and 29 addresses the rejection of these claims as well as the rejection of claim 30, which is dependent on claim 29. The amendments to the claims are made only in view of the rejection under 35 U.S.C. Section 112, second paragraph, and not in view of the references cited in the Office Action.

Rejection of claims 23-35 under 35 U.S.C. Section 103(a) in view of Adams (4,655,088) and Takahashi et al. (5,207,102)

The Office Action rejected claims 23-35 on the basis that the claimed invention would have been obvious from Adams in view of Takahashi et al. Applicant respectfully traverses this conclusion.

The Office Action states that "[i]t is a common practice in the electrical art to connect the metal base to a ground lead. It would have been obvious to one having ordinary skill in the art at the time the invention was made to connect the metal base to the ground lead of the modified Adams for the purpose of providing a ground terminal for connecting the transducer to external ground."

The Office Action does not indicate what in the prior art motivates one of ordinary skill in the art to form the metal base *as part of* one of the leads. Nothing in either of the Adams or Takahashi et al. references indicates that it is desirable to e.g. eliminate the wiring required in Takahashi et al. by providing a lead that also forms the base upon which the transducer is mounted. Consequently, even if the Adams and Takahashi et al. references could be combined, the references do not provide all elements of what the Applicant has claimed.

Further, the Office Action has not indicated what the motivation is to combine the Adams and Takahashi et al. references. The Office Action stated that "[i]t would have been obvious to one having ordinary skill in the art at the time the invention was made to include the exposed metal base with the housing of Adams for the purpose of supporting the pressure transducer as taught by Takahashi et al." However, the Office Action contains no reasoning as to why one of ordinary skill in the art would incorporate the metal die pad of Takahashi et al. into Adams' device, i.e. what the motivation would be for one of ordinary skill in the art to make such a modification, *and* what the motivation is for one of ordinary skill to form that metal die pad as part of a lead. In fact, Takahashi et al. distinguish their device from that of Adams (see Fig. 12

of Takahashi et al. and its accompanying discussion throughout the Takahashi et al. reference) and note the problems associated with Adams' device (poorer accuracy because of stresses). Takahashi et al. indicate that their device solves problems associated with Adams' design, and Takahashi et al. do not suggest the modification to Adams' design that is suggested by the Office Action.

Further, it is not obvious to one of ordinary skill in the art to make the modification. Adams and Takahashi et al. used very different methods to make their pressure sensors. The methods are sufficiently different that one of ordinary skill in this art would not have a reason to insert the metal die pad of Takahashi et al. into Adams' device, let alone decide to form that die pad as part of one of the leads extending into the housing.

Takahashi et al. place their sensor chip on a pedestal, which is secured to a die pad. The leads and die pad are placed in a spaced relationship to one another in a mold, and the necessary electrical connections are made with wires. A liquid polymeric mixture is then injected into the mold so that it encases the die pad, leads, and wires. The liquid polymeric mixture subsequently hardens to form a solid housing to complete the pressure sensor. The die pad forms a portion of a wall of the completed pressure sensor and anchors the sensor chip in place to the polymeric housing. The die pad, exposed to air, absorbs heat that the sensor chip cannot tolerate during the molding process. See 3:40-63 and Fig. 1, 4, 6-7, and 11 (see especially how the die pad is illustrated in the figures as larger in width or diameter than the sensor chip, and how the combined die pad, pedestal, and sensor chip and how the housing is formed over the die pad/pedestal/sensor chip combination to encase it).

Adams first forms a unitary housing having leads that extend through the housing and then inserts a sensor chip through an opening in the housing and onto the floor of a chamber within the housing. The sensor chip is secured to the floor of the housing via an adhesive or bonding material. The leads are then electrically connected to the sensor chip. The sensor chip is not exposed to significant heat during sensor assembly manufacture. See 1:55-66, 2:15-20 and Fig. 3.

There is no reason to place the sensor chip upon a die pad when inserting the pressure chip into Adams' housing. Heat dissipation is not necessary when assembling Adams' pressure sensor, so there is no reason to use a metal die pad. A large, bulky die pad becomes a drawback when trying to insert a sensor chip into a chamber that exists within a formed housing. The die

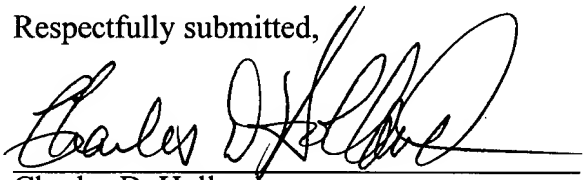
pad especially becomes a draw-back or hinderance when trying to make the pressure sensor as small as possible. The floor of the housing is made larger to accommodate the die pad. In Adams' pressure sensor, the chip needs only to be secured to the floor of the housing - there is no need to hold the sensor chip on a base that separates the chip from the molten polymer so that the chip does not become completely encapsuled within polymer, as can occur in Takahashi et al.'s method.

The difference in Takahashi et al.'s and Adams' methods of making their respective pressure sensors illustrates why it is *not* obvious to place a sensor chip upon a metal base and then insert that base into Adams' housing. Further, the different methods show that there is no reason to pick one portion of what Takahashi et al. teach and apply that to what Adams teaches. Further, each method also illustrates that there is no teaching in the references that would lead one of ordinary skill to adapt one of the lead pads so that a portion of the lead pad forms a die pad upon which the sensor chip sits.

Because there is no motivation to combine Adams with Takahashi et al. as shown by (1) Takahashi et al.'s discussion of and distinction from Adams' pressure sensor and (2) the different methods of making Adams' and Takahashi et al.'s pressure sensors, and/or because the combined teaching of Adams and Takahashi et al. still does not suggest all elements of Applicant's claimed invention, claims 23-35 are patentable over the cited references. Consequently, allowance of the pending claims is earnestly solicited.

In the unlikely event that the transmittal letter is separated from this document and the Patent Office determines that an extension and/or other relief is required, applicant petitions for any required relief including extensions of time and authorizes the Assistant Commissioner to charge the cost of such petitions and/or other fees due in connection with the filing of this document to **Deposit Account No. 03-1952** referencing docket no. 356952000101. However, the Assistant Commissioner is not authorized to charge the cost of the issue fee to the Deposit Account.

Respectfully submitted,

Dated: September 29, 1999 By: 

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